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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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David R. Ohm

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09/08/2005

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/087,878	Applicant(s) OHM, DAVID R.	
	Examiner Michelle R. Connelly-Cushwa	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

Four (4) sheets of formal drawings were filed March 1, 2002 and have been accepted by the Examiner.

Specification

The disclosure is objected to because of the following informalities:

"<__/____,____>" on page 13, line 22, should be replaced by the corresponding application number; "front facet 307" on page 14, line 11, should be changed to –front facet 306--; and "<__/____,____>" on page 18, line 21, should be replaced by the corresponding application number.

Appropriate correction is required.

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 10, 14, 16-24, 30 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Tabuchi (US 5,611,006).

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Regarding claims 1, 2, 18, 19, 22, 23 and 30; Figures 2 and 6 of Tabuchi discloses a method of and a photonic package for monitoring a semiconductor light source (20), the package comprising:

- a housing (10);
- a semiconductor light source (20) within the housing (10), the semiconductor light source (20) having a first light beam output having data encoded thereon (see column 8, lines 46-59);
- a cleaved optical isolator structure (26 and 18; see column 8, line 66, through column 9, lines 42) optically coupled to the semiconductor light source (20), the optical isolator structure including a beam splitter cube (18);
- the beam splitter cube, BSC (18), disposed inside the housing to create a first split output of the light beam output, the BSC (18) having a light beam splitting characteristic that negatively impacts the encoding of the data in the first light beam within a predetermined limited threshold (i.e. the BSC reflects a portion of the light beam and transmits the remainder);
- a photodetector (21) disposed inside the housing (10) to receive the first split output, with the photodetector (21) being adapted to determine the properties of the first split output notwithstanding the first split output being created in the limited impact manner, and wherein

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the photodetector (21) monitors the semiconductor light source (see column 8, lines 46-59);

- a first lens (16b) optically coupled to the semiconductor light source (20), the first lens (16b) equipped to collimate the first light beam output;
- a second split output of the first light beam output created by the BSC (18); and
- a second lens (16d) optically coupled to the BSC (18) and an optical fiber (23), the second lens (16d) equipped to focus the second split output to the optical fiber (23).

Regarding claims 5 and 24; the semiconductor light source (20) is a semiconductor laser diode chip.

Regarding claims 10 and 32; the predetermined limited threshold comprises the first split output being a portion or a percentage of the first light beam output (i.e. the BSC creates a first split output that is a portion or a percentage of the first light beam output and directs that portion to photodetector 21).

Regarding claim 14; the photodetector (21) is a photodiode.

Regarding claims 16, 17, 20 and 21; in Figure 6, Tabuchi discloses that the package may further comprise a processor (31) to receive electrical signals from the photodetector (21); wherein the processor (31) must inherently comprise a processor having at least access to characterization data to facilitate calibration of the received first split output, so that the connected power control (33) may send an appropriate

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signal to the light source drive (30) in response to the received first split output to stabilize the light source (20).

Claims 1, 5, 7-10, 12-15, 18, 22, 24, 26, 27 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Spaeth (US 6,021,238).

Regarding claims 1, 18 and 22; Figure 1 of Spaeth discloses a method of and photonic package for monitoring a semiconductor light source, the package comprising:

- a housing (34, 35);
- a semiconductor light source (2) disposed within the housing (34, 35), the semiconductor light source (2) having a first light beam output at a beam-exit surface (11), the first light beam output having data encoded thereon;
- a beam splitter cube (4, 14) disposed inside the housing to create a first split output of the first light beam output, the BSC (4, 14) having a light beam splitting characteristic that negatively impacts the encoding of the data in the first light beam within a predetermined limited threshold (see column 7, lines 38-40); and
- a photodetector (21) disposed inside the housing (34, 35) to receive the first split output with the photodetector (21) being adapted to determine properties of the first split output notwithstanding the first split output being created in the limited impact manner;
- wherein the beam splitter cube (4, 14) may include a WDM filter and WDM filters are optical isolators, and, thus, the package may further

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comprise an optical isolator that includes a beam splitter cube (see column 8, lines 6-20).

Regarding claims 5 and 24; the semiconductor light source (2) is a semiconductor laser.

Regarding claims 7-9, 26 and 27; the BSC (4, 14) comprises a nonpolarizing dielectric BSC including first and second right angle prisms (15, 16) adhesively joined at the hypotenuse, and the BSC comprises a dielectric material to create the first split output (see column 8, lines 6-20).

Regarding claims 10 and 32; the predetermined limited threshold comprises the first split output being a portion or a percentage of the first light output beam (see column 7, lines 38-40).

Regarding claims 12 and 13; the BSC may be made of borosilicate glass (see column 9, lines 6-20) and BK7A is high quality borosilicate glass.

Regarding claims 14 and 15; the photodetector comprises a p-i-n junction photodiode (see column 7, lines 51-59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth (US 6,021,238) in view of Asakura et al. (US 6,496,623 B2).

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Regarding claims 3 and 4; Spaeth discloses all of the limitations of claims 3 and 4 as applied to claim 1 above, except for specifically stating that the BSC can be incorporated with an electro-optic modulator or that the BSC comprises a cleaved yttrium-iron garnet (YIG) type crystal. Spaeth teaches that the BSC (14) is formed from known materials and that the BSC may be a known WDM filter (see column 8, lines 6-20), wherein WDM filters are isolators. Asakura et al. teaches a BSC (6) that may be formed of YIG to create an optical isolator (WDM filter) having a photo-electro-magnetic effect. Spaeth does not suggest that a specific WDM filter be incorporated in the invention, thus suggesting to one of ordinary skill in the art that any known BSC that operates as a WDM filter may be incorporated. Therefore, one of ordinary skill in the art would have found it obvious to incorporate the BSC taught by Asakura et al., which is formed from YIG and has an electro-optic effect in the invention of Spaeth, as the WDM filter (isolator) BSC.

Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabuchi (US 5,611,006) in view of Liedenbaum et al. (US 5,701,396).

Regarding claims 6 and 25; Tabuchi discloses all of the limitations of claims 6 and 25 as applied to claims 5 and 24 above, except for specifically stating that the semiconductor laser diode (2) is a gallium arsenide based semiconductor laser. Tabuchi is silent as to the specific type of semiconductor laser diode that is incorporated into the invention, thus suggesting to one of ordinary skill in the art that any well known type of semiconductor laser diode could be incorporated in the invention. Semiconductor lasers are typically formed from gallium arsenide to create light at

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wavelengths from 660-900 nm (see column 4, lines 42-56, of Liedenbaum et al.).

Therefore, one of ordinary skill in the art would have found it obvious to incorporate a gallium arsenide semiconductor laser diode in the invention of Tabuchi as the semiconductor laser diode (2).

Claims 11 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tabuchi (US 5,611,006).

Regarding claims 11 and 33; Tabuchi discloses all of the limitations of claims 11 and 33 as applied to claims 10 and 32 above, except for stating that the first split output specifically comprises a two percent portion of the first light beam output. Tabuchi is silent as to the specific portion of the first light beam output that forms the first split output, thus suggesting to one of ordinary skill in the art that the first split output could comprise any reasonable percentage or portion of the first light beam. One of ordinary skill in the art would have recognized the advantages of having a small portion of the first light beam output comprise the first split output, including allowing the package to transmit a larger percentage of the light, while using that small portion to monitor/stabilize the laser source (2), thereby causing minimal loss to the amount of light transmitted by the package. Therefore, one of ordinary skill in the art would have found it obvious to have the first split output be any small percentage of the first light beam output, including 2 percent.

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Spaeth (US 6,021,238) in view of Kobayashi et al. (US 4,627,688).

Regarding claims 28 and 29; Spaeth discloses all of the limitations of claims 28 and 29 as applied to claim 22 above, except for the BSC comprising a polarizing BSC. In column 8, lines 6-20, Spaeth discloses that the BSC (14) is produced from known dielectric materials, including borosilicate glass, and that the beam splitter includes a dielectric material to create the first split output. Spaeth also teaches that the BSC is constructed in such a way that it allows a portion of the emitted radiation to pass through and that it reflects a portion. Kobayashi et al. discloses a polarizing beam splitter that is made of dielectric borosilicate glass (BK7) and that can be adjusted to have any desired ratio of transmitted to reflected light (see Figure 2; column 1, lines 9-16; and column 6, lines 25-60). Thus, one of ordinary skill in the art would have found it obvious to incorporate the polarizing BSC disclosed by Kobayashi et al. in the invention of Spaeth in order to provide a BSC that can have any desired ratio of transmitted light to reflected light.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tabuchi (US 5,611,006) in view of Ishikura et al. (US 5,920,420).

Regarding claim 31; Tabuchi discloses all of the limitations of claim 31 as applied to claim 30 above, except for specifically stating that the isolator element comprises bismuth garnet. Tabuchi is silent as to the specific type of isolator element employed in the invention, except for stating that well known methods are used to form the optical isolator, thus suggesting to one of ordinary skill in the art that any well known optical isolator can be incorporated in the invention. Optical isolators usually comprise of bismuth garnet (see column 1, lines 27-35, of Ishikura et al.). Therefore, one of

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ordinary skill in the art would have found it obvious to incorporate an optical isolator comprising bismuth garnet in the invention of Tabuchi.

Conclusion

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (703) 305-5327. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on 703-308-4819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (703) 308-0956.


Michelle R. Connelly-Cushwa
Patent Examiner
September 17, 2003